PROCEEDINGS OF THE NEW YORK ENTOMOLOGICAL SOCIETY

(Meetings held in Room 129 of the American Museum of Natural History unless otherwise indicated)

Meeting of October 1, 1963

President Bernard Heineman presided; 17 members and 6 guests were present. Mr. Heineman mentioned that the Society will honor its 50-year members in the near future and will present a copy of the **Herbert F. Schwarz Memorial Volume** of the **Journal** to Mrs. Schwarz. Dr. Klots reported briefly on the International Zoological Congress, held during August in Washington, D. C., with particular reference to discussions on the rules of nomenclature. Dr. William S. Creighton represented the Society during the summer at the Canadian Centennial of Entomology.

Dr. Klots introduced a guest, Dr. Porolny of Czechoslovakia, who presented an interesting illustrated talk on the geology and biology of the Carpathian Mountains.

PROGRAM **Insect Egg-Shell Cements** by Robert C. Riley of Rutgers University. An abstract follows.

R. W. Fredrickson, Sec.

Insect Egg-Shell Cements

The insect egg-shell or chorion is the product of the follicular cells in the ovary and forms a dense protective covering about the oocyte. The egg-shell is frequently covered by a thin layer of adhesive in many insect species. The adhesive may secure the eggs to the surface on which they are laid; or it may serve to bind the eggs into a compact capsule or ootheca as in Blattidae and Mantidae. The adhesive may be secreted by the follicular cells in the ovary or, more commonly, by the accessory glands. When the accessory glands function to secrete an adhesive, they may be referred to as colleterial glands.

The most detailed knowledge we have of insect colleterial gland secretions is in the cockroach. The left colleterial gland secretes protein, an oxidase and a dihydric phenol, protocatechuic acid, in the form of 4-0-β-glucoside of protocatechuic acid, while the right gland secretes a β-glucosidase. When the secretions of the two glands are mixed in nature or under experimental conditions, the secretions interact and the β-glucosidase liberates protocatechuic acid from its β-glucoside. The resulting acid is then enzymatically oxidized to a quinone which presumably forms cross-linkages between adjacent molecules of the structural protein, giving the tanned product sclerotin.

Proteinaceous material has been reported in the egg-shell adhesive of *Rhodnius prolixus* but no evidence was detected of a polyphenol reaction. In *Pieris brassicae* the adhesive has been classified as a lipo protein. The accessory glands in *Drosophila melanogaster* have been associated with spermatozoa activation. Investigations by this author have indicated that the accessory glands of *Drosophila melanogaster* secretes an adhesive on the egg-shell as the egg passes through the uterus. In addition, the accessory gland secretions have been histochemically classified as containing either a mucoprotein or a mucopolysaccharide protein complex.

—Robert C. Riley

Meeting of October 15, 1963

President Heineman called the meeting to order in Room 319 with 15 members and 9 guests present. Mr. Robert C. Riley of Rutgers University was proposed for membership.

PROGRAM **Comments by Members of their Summer or Recent Activities.** Mr. Heineman mentioned his collecting in the Thousand Islands and read a passage from Clerck's

Iconeus, published in 1759. Dr. Vishniac passed around a remarkable insect book published by Roesel von Rosenhof in 1740. Mr. Pohl talked of his trip to France. Miss Alice Gray spoke of the Junior Society's doings, and exhibited recent additions to her collection of insect-inspired toys and ornaments. The First International Conference on Acarology was discussed by Dr. Fredrickson. Mr. Teale made comments about the summer wild life at his home in Connecticut, Insect Farm, and showed one slide. Dr. Kormilev exhibited some extremely flat bugs, Family Phloeidae, from South America. Mr. Bruce Cutler exhibited a specimen of the spider *Loxosceles rufescens,* collected in New York. Dr. Schmitt exhibited a large hornet's nest showing red paper made from the material used in construction. Mr. Poelzl showed several slides of local insects. Dr. Miller described his work with carpenter bee mites in California.

R. W. Fredrickson, Sec.

NOVEMBER 5, 1963—ELECTION DAY—NO MEETING

MEETING OF NOVEMBER 19, 1963

President Heineman called the meeting to order in Room 319; 38 members and 35 guests were present. Mr. Robert C. Riley was elected a member of the Society and Mr. Bruce Cutler and Mr. Thomas Hlavac, both of City College, were proposed for student memberships. It was announced that Ernest L. Bell, an old member and an authority on the Hesperiidae, is seriously ill in Flushing Hospital. The Secretary was instructed to write a letter to Mr. Bell expressing the wish of the Society for a speedy recovery. Dr. Klots presented a bound copy of the **Herbert F. Schwarz Memorial Volume** of the **Journal** to Mrs. Dorothy Schwarz. Doctor Schwarz' distinguished record and his long association with the Society were recalled.

PROGRAM **Insect Farm at Trailwood.** Dr. Teale presented a new series of superb color slides depicting nature through several seasons at his farm.

R. W. Fredrickson, Sec.

MEETING OF DECEMBER 3, 1963

President Heineman presided; 22 members and 8 guests were present. Mr. Bruce Cutler and Mr. Thomas Hlavac were elected to student memberships. Mr. Heineman announced that the 50-year members of the Society would be honored at the meeting of January 21, 1964. A newspaper clipping was read telling of banded Monarch butterflies which were released in New England and caught later in Florida, some as soon as 14 days after release.

PROGRAM **An Evening with the Family Album of the Sphingidae.** Dr. James C. King of the New York University School of Medicine presented an interesting account of larval and adult hawkmoths. He had color slides of a number of species in the family.

President Heineman read the following resolution, drafted by Dr. Treat, and proposed that it be recorded in the minutes:

> "Resolved, that the Secretary be instructed to record in the minutes the grief of the Society and its dismay at the assassination of President Kennedy, and our confidence that President Johnson will be inspired by his predecessor's example to bring the power of science to the improvement of our country and of the society of all mankind."

The resolution was unanimously approved.

R. W. Fredrickson, Sec.

Meeting of December 17, 1963

President Heineman presided; 15 members and 7 guests were present. Miss Alice Abeson, preparator in the Dept. of Entomology of the Museum, was proposed for membership. Dr. Teale spoke of a letter from C. B. Williams, now in Scotland, who desires information on the records of H. J. Shannon, a former member of the Society, concerning insect migration on Long Island. Dr. Rozen introduced two guests: Dr. Sixto Coscarón, of Argentina, a specialist on Tabanidae now doing research at the Museum; and Dr. J. van der Vecht, of the Leiden Museum of Natural History, Holland. Dr. van der Vecht, a specialist in Hymenoptera, showed some slides depicting remarkable cases of mimicry in social wasps, and between wasps and such insects as Diptera, Hemiptera, and Lepidoptera.

PROGRAM **Notes on the Anatomy of a Ponerine Ant,** by Dr. James Forbes. An abstract follows.

R. W. Fredrickson, Sec.

Notes on the Anatomy of a Ponerine Ant

Anatomical studies of the digestive tracts in worker and queen ants have been used to supplement behavioral studies of this social insect in helping to determine which subfamilies are primitive and which are more advanced.

The male ant is more wasp-like in appearance and is regarded by some myrmecologists to be the more primitive or conservative member of the colony. The few studies made of the male reproductive systems in ants seem to indicate patterns or features which are distinctive for each subfamily: a formicine type; a myrmicine type; and for the dorylines, perhaps, generic types.

This study of the male of *Rhytidoponera metallica* is the second for its digestive tract, but the first to be made of a male ponerine reproductive system. The observations on the digestive tract support a ponerine-doryline-myrmicine relationship. The observations on the male reproductive system of *R. metallica* reveal no doryline features, but show a mixture of myrmicine and formicine features. Thus, males of more ponerine genera will have to be studied to understand these differences in relationships.—James Forbes

Meeting of January 7, 1964

President Heineman presided; 25 members and 6 guests were present. Miss Alice Abeson was elected to membership. The Secretary ascertained that a quorum was present so that the annual business meeting could be conducted. The Nominating Committee, composed of A. B. Klots, J. Schmitt and Elsie Klots as Chairman, presented the following slate of candidates for 1964:

President—	Dr. Jerome G. Rozen, Jr.
Vice-president—	Dr. Richard W. Fredrickson
Secretary—	Dr. David Miller
Assistant Secretary—	Mr. Albert Poelzl
Treasurer—	Mr. Jacob Huberman
Assistant Treasurer—	Mrs. Patricia Vaurie
Trustees—	Mr. Bernard Heineman, Dr. John B. Schmitt
	Dr. Alexander B. Klots, Dr. Pedro Wygodzinsky

It was moved and seconded that nominations be closed, and that the Secretary cast one vote for the list of candidates.

Dr. Rozen then took the chair as President. A formal motion recognizing Mr. Heineman's excellent leadership and help was unanimously voted. Dr. Teale reported that he had recently found numerous springtails in the rosettes of mullein.

PROGRAM **Bogs,** by Dr. A. B. Klots of City College: An abstract follows.

R. W. Fredrickson, Sec.

Bogs

Acid, sphagnaceous bogs are worldwide, and widespread in Europe and North America. While many partly developed bogs and boggy areas will be found, the complete and typical bog represents a late stage in the succession from a poorly drained pothole, often of glacial origin, toward the plant climax. A floating plant mat spreads inward from the periphery of the pond or lake, eventually covering the entire surface. In time even the underlying water may disappear, forced out by the accumulation of debris, which forms peat. Successional stages, and the age of the formation, can be determined by studying the stratification of this peat. Depending on the age of the bog and the speed with which it has filled in, nearly any intermediate stage may be found from a narrow bog strip fringing a pond to a completely filled-in area occupied by forest.

Bogs are most abundant in the boreal forest at and near northern timberline, where they account for a large part of the so-called Hudsonian Life Zone biota. South of this they are common throughout much of the Canadian Zone boreal forest, becoming less common and more isolated from each other southward. A few exist in deciduous forest areas, "Transition Zone," even at low elevations; and some occur at higher elevations along the Sierras and Rocky and Appalachian Mts. south to California, Colorado and North Carolina. The biota of these bogs are largely boreal relicts, left behind when the Pleistocene glaciers receded northward. Like mountaintops, therefore, bogs furnish an opportunity to study possible population changes during measurable periods of isolation.

Heaths such as *Andromeda, Chamaedaphne, Ledum* and *Vaccinium macrocarpon* and *Oxycoccus* are prominent. Other characteristic bog plants are *Sarracenia purpurea, Drosera* spp., *Meneanthes, Utricularia, Pogonia, Eriophorum* spp. and *Sphagnum* spp. In the boreal bogs the characteristic trees are Black Spruce, *Picea mariana,* and Tamarack, *Larix laricina;* in southern New England and New York these give way to Coast White Cedar, *Chamaecyparis thyoides* of the Atlantic Coastal Plain. All these bog plants are strongly acidophile.

Many of the insects of the bogs are merely facultative, occurring widely also in marshes and wet meadows. Many others are true bog obligates with boreal, and often Palaearctic affinities. Some characteristic Lepidoptera of this sort are as follows (PAL indicates the occurrence of other subspecies in the Palaearctic region).

SATYRIDAE *Oeneis jutta* (Huebner) PAL. NYMPHALIDAE: *Boloria eunomia* (Esper) PAL, *B. frigga* (Thunberg) PAL. LYCAENIDAE: *Lycaena epixanthe* (Boisduval & Leconte), *Incisalia lanoraieensis* Sheppard. NOCTUIDAE: *Syngrapha microgamma* (Huebner) PAL, *Anarta cordigera* (Thunberg) PAL, *Exyra rolandiana* Grote. PYRALIDIDAE: *Loxostege commixtalis* (Walker) nec auctorum, *Catoptria maculalis* (Zetterstedt) PAL, *Crambus lyonsellus* Haimbach, *C. youngellus* Kearfott, *C. alienellus* (Zincken) PAL (subsp. *labradoriensis* Packard). OLETHREUTIDAE: *Olethreutes schulziana* (Fabricius) PAL (subsp. *nordeggiana* McDunnough) *Bactra lanceolana* (Huebner) PAL TORTRICIDAE: *Aphelia alleniana* (Fernald), *Peronea minuta* (Robinson).

The talk was illustrated with color slides showing a number of bogs from Manitoba to New Jersey in various stages of succession, and photographs of representative bog Lepidoptera.—Alexander B. Klots

MEETING OF JANUARY 21, 1964

President Jerome Rozen presided; 27 members and 12 guests were present. Dr. Rozen announced the following committee appointments:

Editorial Committee:	Dr. Lucy Clausen, Dr. Herbert Ruckes
	Dr. James Forbes, Dr. David Miller
Program Committee:	Dr. W. Fredrickson, Dr. Louis Marks
	Dr. John B. Schmidt

Mr. Bernard Heineman discussed the origin of the idea of presenting certificates to members who had been in the Society 50 years or more. Dr. Alexander B. Klots made the presentations to Dr. E. R. P. Janvrin and to Dr. W. T. M. Forbes, who were present, and Dr. Herbert Ruckes presented certificates to Mr. Chris Olsen and to Dr. Alexander Petrunkevitch in absentia, their certificates will be forwarded to them. Dr. Rozen announced that Mr. Olsen had planned to be present, but due to an accident which Mrs. Olsen sustained that afternoon he was at the hospital with her. Dr. Janvrin's two daughters were introduced as guests.

PROGRAM **The Value of Wild Bees in the Pollination of Blueberries and Cranberries** by Prof. Robert S. Filmer of Rutgers University. His talk pointed out the economic value of blueberries and cranberries in N. J. and the importance of the different insects in the maturing of these crops. His talk was illustrated with slides.

David C. Miller, Sec.

Meeting of February 4, 1964

President Rozen presided; 15 members and 7 guests were present. Dr. Rozen announced the formation of a committee to review the By-Laws of the Society to consist of Asher Treat, Bernard Heineman and Elsie Klots as Chairman. Mr. Karl Mollins of the Boyce-Thompson Institute for Plant Research, Yonkers, N. Y., was proposed for membership. Miss Alice Gray showed a newly discovered, luminous millipede from California. She announced that the Junior Society, which now has 22 active members and several candidates for membership, has planned an all day field trip for the following Saturday.

PROGRAM **Subfamily Emesinae of the Family Reduviidae (Hemiptera).** Dr. Pedro Wygodzinsky of the Museum staff discussed the comparative morphology, the ecology, the behavior, the zoogeography, and the phylogeny of these bugs. He pointed out that they are distinguished by a trend towards elongation of their body and appendages which is accompanied by adaptations of the internal anatomical structures. Domestic, peridomestic, spider-web inhabiting, and cavernicolous forms are frequent. This is basically a tropical and subtropical group which shows peculiarities of distribution, such as the presence of some endemic genera and species on true oceanic islands where other endemic reduviid genera are absent. The talk was illustrated with slides.

David C. Miller, Sec.

Meeting of February 18, 1964

Vice-president Richard Fredrickson called the meeting to order; 15 members and 14 guests were present. He announced that President Rozen and Dr. Wygodzinsky were collecting in Trinidad. Dr. Tischler, brother-in-law of Dr. John Schmitt, was introduced as a guest. Mr. Karl Mollins was elected to membership and Dr. George R. Ferguson of the Geigy Chemical Co., Ardsley, N. Y., was proposed for membership.

PROGRAM **Caves, Arthropods and Ecology** by Mr. Richard Graham of the Rutgers University Dept. Zool. and Physiol. An abstract follows.

David C. Miller, Sec.

Caves, Arthropods and Ecology

The subterranean habitat, especially that found in the solution channels of limestones, is available to organisms throughout the world. Adaptation to the cave habitat such as loss of eyes, depigmentation, elaboration of tactile sensory mechanisms, size reduction, elgonation of limbs, and inability to tolerate humidities below 95 per cent, temperature changes or strong light is found amongst members of four animal phyla. Anthropods have given rise to the vast majority of cave adapted animals, and they show a remarkable degree of

parallel evolution of the above characteristics. Ecologically they are classed as obligative cavernicoles or troglobites. Many animals are faculative cavernicoles and include a whole spectra of preadapted traits which allow them to exploit the cave habitat to a greater or lesser degree. Examples were given of relict species due to Quaternary climate changes, seasonal visitors, permanent residents which show no tendency to evolve into troglobites, animals which enter caves over a wide geographic area and those limited to local cave-associated populations, and accidental records.

The cave entrance light, temperature and moisture gradients were shown to filter out animals depending upon which of these factors act as ecological barriers. This applies to the epigeic and troglic communities; the zone of overlap is ecotonal. Cave flora includes fungi and chemosynthetic bacteria. The latter may initiate a food chain independent of external energy sources. Hence, in remote portions of caves a true ecosystem exists. However, most caves are contaminated by debris derived from the surface which may permit establishment of more complex, marginal communities.

North and Central American cave animals and ecology were stressed as work on these problems and are still in an explanatory stage. Studies in the United States lag behind those of European workers by as much as 50 years. No suitable classification of all types of cave-associated organisms exists, and no standardization of cave zones is available. Many approaches to these problems are currently in progress, and the synthesis of these results is a promising research area.—R. E. Graham

MEETING OF MARCH 3, 1964

President Rozen presided; 16 members and 8 guests were present. He commented briefly on the collecting trip to Trinidad. Dr. George R. Ferguson was elected to membership, and Dr. Carl W. Schaefer of Brooklyn College was proposed for membership. Miss Anne Birdsey of the Brooklyn Botanical Garden, Mr. Herbert Pincus and Mr. and Mrs. John Medoff were introduced as guests. Miss Alice Hopf reported on the program of tagging Monarch butterflies for migrational studies. This past summer 1308 butterflies were tagged and 128 returned. Evidence was found of a Spring migration in addition to the normal Fall migration. This work is growing in Southern California and in Australia, and attempts are being made to start a program in South America.

PROGRAM **Flight Habits if Mosquitos** by Mr. Thomas Bast of Rutgers University. An abstract follows.

David C. Miller, Sec.

Flight Habits of Mosquitoes

The vertical stratification, seasonal distribution, and time of activity of several mosquito species in New Jersey have been studied for several years. The findings indicate that there exists a definite periodicity of flight activity along with a preference, on the part of some species, for specific altitudes at which this activity is most pronounced. This activity in relation to time, temperature, and relative humidity was discussed. The instrumentation used in collecting the information and the automatic collecting devices were considered. Slides illustrated the talk.—Thomas Bast

MEETING OF MARCH 17, 1964

Doctor Rozen presided; 23 members and 12 guests were present. Dr. Lucy Clausen, Editor of the *Journal*, pointed out changes that have been made in the *Journal* format. She mentioned that the backlog of papers now includes a number of species lists, and it is hoped that other types of material will be submitted with shorter papers preferred. The backlog has been reduced so that the delay in publication should now be less than

a year. Dr. Carl W. Schaefer was elected to membership, and Mr. and Mrs. John K. Medoff and Miss Augusta Golden of the Thomas Y. Crowell Co. were proposed for membership. The death of Dr. Alexander Petrunkevitch, a 50 year member of the Society, was announced, and the members stood for a moment of silence in honor of his memory. A letter of thanks from Mrs. Chris Olsen for flowers sent her by the Society during her illness was read, and it noted that she is making a good recovery. A letter was read from Mrs. Herbert F. Schwarz expressing her appreciation for the effort involved in producing the **Herbert F. Schwarz Memorial Volume** of the **Journal.** A contribution of $1,000 to The Herbert F. Schwarz Memorial Fund was enclosed. Dr. Vishniac showed a book from his collection, a work on birds by Pierre Belon, published in 1555. Mrs. Remington, wife of the speaker of the evening was introduced as a guest, as was Dr. Toge Johansson of Queens College. Dr. Rozen showed a bee larva of the genus *Epicharis,* collected in Trinidad. This is the first discovery of the larva and larval cell of the genus. He briefly discussed the morphology of the larva and the cell.

PROGRAM **Chromosomes and the Timing of Reproduction in the Lepidoptera.** Dr. Charles L. Remington of Yale University in an illustrated talk discussed the seasonal occurrence of meiosis in male Lepidoptera, and the factors in the biology of particular species which cause meiosis to occur earlier or later in the life cycle.

David C. Miller, Sec.

Meeting of April 7, 1964

President Rozen presided; 17 members and 11 guests were present. Elected to membership were: Mr. and Mrs. John K. Medoff, and Miss Augusta Goldin. Proposed for membership were: Mr. Samual Ristich of E. R. Squibb & Sons, and Dr. Toge Johansson of Queens College. Mr. Dom Pirone, a graduate student at Fordham University, was introduced as a guest. Mr. Bruce Cutler showed a terrestrial flatworm taken at Van Courtland Park. Dr. Elsie Klots showed a children's book on butterflies prepared by Gates Clark of the United States National Museum.

PROGRAM **Some Little Known Aspects of Spider Biology.** Dr. Benjamin J. Kaston of Central Connecticut State College discussed recent observations and findings concerning parental care and "social" life, unusual habitats, and unusual foods. The slit sense organs in spiders have been shown to perceive sounds and odors and even to serve as mechanoreceptors. A series of color slides showed representative spiders and spider motifs in art and decoration.

David C. Miller, Sec.

Meeting of April 21, 1964

Dr. Rozen presided; 17 members and 12 guests were present. Mr. Samuel Ristich and Dr. Toge Johansson were elected to membership and Mr. Robert L. Buckbee, Miss Arabelle Wheatley (Mrs. Buckbee), Mr. John Stamatov, and Mr. José Lambertus were proposed for membership. Dr. Treat asked the members to look for mites on insects now that spring has arrived. He said that he had recently taken hypopi from a bumblebee. Miss Alice Gray showed some print fabric with an insect design. Also, she noted receipt of an egg mass of the mantis *Bruneria* which was hatching one or two eggs at a time rather than all at once. A general discussion of the hatching of mantis egg masses and the stimuli which may trigger them followed. Dr. Rozen asked to be informed of the nesting sites of ground nesting bees.

PROGRAM **The Comparative Ecology of Temperate and Tropical Zone Fiddler Crabs** by Mr. Don C. Miller of Queens College. An abstract follows.

David C. Miller, Sec.

The Comparative Ecology of Temperate and Tropical Zone Fiddler Crabs

Studies on habitat preference and prevailing environmental conditions were carried out at Beaufort, North Carolina, for the three temperate zone species of crabs (*Uca pugilator, U. pugnax, U. minax*), and at Puerto Rico for the tropical species (*U, rapax* and *U. thayeri*). Field studies at the range boundaries of these species showed a local distribution pattern which corresponds to the occurrence of warm microhabitats at the northern boundary of each of these groups. Thus, low temperature was suggested as a prime limiting factor. This was borne out in laboratory experiments which demonstrated that cold (below 20 degrees C.) will inhibit growth and moulting in *U. pugnax.* Tropical zone species were even less tolerant of low temperatures, with the LD 50 reached in 4 days at 10 degrees C. for *U. rapax.* Thus, these crabs would not be expected to survive the periodic cold winters of northern Florida.

The southern boundary of *U. pugnax* and *U. minax* occurs in north central Florida, their ranges overlapping slightly with the tropical zone species. Species interaction is probably not a factor contributing to this distribution pattern since each species shows slightly differing habitat preferences. Dessication studies demonstrate species differences among larger crabs, which may be an expression of adaptation to microhabitats of differing elevation within the intertidal zone. Also, these species show similar responses to heat and salinity stress when compared with species which occur in southern Florida, which rules out direct action of these factors on the adults. It is suggested that their distribution may be limited from the more southern parts of Florida due to the failure of the planktonic larval stages to either reach or survive in the shallow coastal lagoons and waterways which have minimal circulation. This results in a system with high summer temperatures, widely fluctuating salinities, and where diurnal tides are absent, the lack of an intertidal zone.—Don C. Miller

MEETING OF MAY 5, 1964

President Rozen presided; 26 members and 13 guests were present. Mr. Robert L. Buckbee, Miss Arabelle Wheatley, Mr. John Stamatov, and Mr. José Lambertus were elected to membership. Dr. Kumar Krishna, of The City College, and Mr. Fred Beam and Mr. Rubon Abasa, graduate students at Rutgers University, were introduced as guests. Mr. Albert Poelzl displayed a goldenrod gall.

PROGRAM **A Brief Entomological Trip to Trinidad.** The trip that Doctors Jerome Rozen and Pedro Wygodzinsky had taken last February was to study bees and reduviid bugs and to collect generally for the museum collections. The talk was illustrated with slides.

David C. Miller, Sec.